THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today
(1) was not written for publication in a law journal and
(2) is not binding precedent of the Board.

Paper No. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ROBERT W. GUNDLACH and
ERIC G. RAWSON

Appeal No. 1997-0758
Application 08/140,658[1]

ON BRIEF

Before BARRETT, FLEMING and HECKER, Administrative Patent Judges.

HECKER, Administrative Patent Judge.

DECISION ON APPEAL

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[1] Application for patent filed October 21, 1993.

This is a decision on appeal from the final rejection of claims 1 through 19, all claims pending in this application. The invention relates to an electrorheological acoustic print head. In particular, referring to Figure 2, acoustic transducer 102 generates acoustic energy that passes into a base plate 104, and continues onward into a channel 112 that holds an electrorheological fluid 114. Acoustic energy is transferred to the fluid 114, resulting in droplet ejection suitable for printing. This droplet ejection can be controlled through the use of conductive electrodes 122 positioned adjacent to the channel 112. The electrodes 122 promote an electric field that greatly increases viscosity of the fluid 114. Since this viscosity increase inhibits droplet ejection in response to transfer of acoustic energy, it is possible to control droplet ejection by modulating the electrical energy supplied to the conductive electrodes 122, rather than modulating the power supplied to the acoustic transducer 102.

Representative independent claim 19 is reproduced as follows:

19. A method of controlling droplet ejection from an electrorheological fluid comprising the steps of:

radiating acoustic energy through the electrorheological fluid such that droplets of said electrorheological fluid are ejected when a lower electric field is applied through the fluid; and

selectively applying a higher electric field to the electrorheological fluid so that the viscosity of the electrorheological fluid increases sufficiently to inhibit ejection.

The Examiner relies on the following references:

Clark	4,014,693	Mar. 29, 1977
Elrod et al. (Elrod)	4,751,530	Jun. 14, 1988

Claims 1 through 19 stand rejected under 35 U.S.C. § 103 as being unpatentable over Clark in view of Elrod[2].

[2] This is a new ground of rejection presented in the Examiner's Answer, paper no. 10. This rejection uses the same references as the final rejection, paper no. 4, but reverses the order (from Elrod in view of Clark to Clark in view of Elrod) and the reasoning.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the brief, reply brief, answer and supplemental answer for the respective details thereof.

OPINION

After a careful review of the evidence before us, we will not sustain the rejection of claims 1 through 19 under 35 U.S.C. § 103.

At the outset, we note that Appellants have indicated on page 3 of the brief that all claims stand or fall together. The Examiner agrees, answer-page 2.

The Examiner has failed to set forth a ***prima facie*** case. It is the burden of the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the reasonable teachings or suggestions found in the prior art, or by a reasonable inference to the artisan contained in such teachings or suggestions. ***In re Sernaker***, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed. Cir. 1983).

The Examiner reasons that Clark teaches most of the invention (noting Figure 5) with photoconductor portions (col. 4, lines 53-59) suggesting the use of a plurality of electrodes (supplemental answer-pages 3 and 4). The Examiner states, “However, Clark does not disclose providing a transducer acoustically coupled to the container for focusing acoustic energy into the electrorheological ink, ...(supplemental answer-page 4).

To provide the transducer, the Examiner indicates that Elrod discloses a transducer to provide acoustic energy to a container of ink to control ink spot size for the nozzleless ink container; and that it would have been obvious to combine Elrod with Clark (pages 4 and 5 of the supplemental answer).

Appellants have argued in their brief and reply brief that the Examiner has not addressed Appellants’ arguments relating to hindsight reconstruction or motivating force for combining Clark and Elrod. The Examiner responds by citing Elrod

at column 1, lines 45-50 (supplemental answer-page 6). We agree with Appellants, and see no rational or motivation to combine these references.

The Federal Circuit states that "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." ***In re Fritch***, 972 F.2d 1260, 1266 n.14, 23 USPQ2d 1780, 1783-84 n.14 (Fed. Cir. 1992), ***citing In re Gordon***, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). "Obviousness may not be established using hindsight or in view of the teachings or suggestions of the inventor." ***Para-Ordnance Mfg. v. SGS Importers Int'l***, 73 F.3d at 1087, 37 USPQ2d at 1239, ***citing W. L. Gore & Assocs., Inc. v. Garlock, Inc.***, 721 F.2d at 1551, 1553, 220 USPQ at 311, 312-13.

Clark provides **liquid flow** to record/print information, and controls the **flow** with electrode voltage bias to change the liquid/fluid viscosity. Clark does not "radiate acoustic energy through the electrorheological fluid such that droplets ...**are ejected** when a lower electric field is applied

through the fluid;" (emphasis added) as recited in claim 19. Although Elrod teaches a transducer to radiate acoustic energy **to eject** droplets, there is no mention of controlling fluid viscosity in any manner, and no motivation that would suggest a combination with Clark.

Since there is no evidence in the record that the prior art suggested the desirability of combining Clark and Elrod, we will not sustain the Examiner's rejection of claim 19. Likewise, the remaining claims on appeal also contain the above limitations of acoustic fluid ejection and control of fluid viscosity as discussed with regard to claim 19. Thus, we will not sustain the rejection as to claims 1 through 18.

We have not sustained the rejection of claims 1 through 19 under 35 U.S.C. § 103. Accordingly, the Examiner's decision is reversed.

REVERSED

Lee E. Barrett Administrative Patent Judge	)
	)BOARD OFPATENT
Michael R. Fleming Administrative Patent Judge	) APPEALS) INTERFERENCES
Stuart N. Hecker Administrative Patent Judge	)

SH/dm

Ronald Zibelli
Xerox Corp.
Xerox Square 020
Rochester, NY 14644